



MONDAY, JULY 18, 2022

11:00 AM - 12:30 PM

04-01 Advanced Tools for Cyber-physical systems and Digital Twins

Room: Conference Center B

Chair: **Paolo Pezzini - U.S. Dept of Energy, Ames Lab**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Biao Zhang - U.S. Department of Energy National Energy Technology Laboratory**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Integration of Dynamic Models and Virtual Reality for the Training of Steam Generator Operators

11:00AM - 11:18AM

Technical Paper Publication: POWER2022-85548

Luca Mantelli - University of Genoa

Marco Ferrando - University of Genoa

Alberto Traverso - University of Genoa

Franca Giannini - Consiglio Nazionale delle Ricerche

Katia Lupinetti - Consiglio Nazionale delle Ricerche

Marina Monti - Consiglio Nazionale delle Ricerche

Sara Anastasi - Istituto nazionale Assicurazione Infortuni sul Lavoro

Giuseppe Augugliaro - Istituto Nazionale Assicurazione Infortuni sul Lavoro

Luigi Monica - Istituto Nazionale Assicurazione Infortuni sul Lavoro

Hyperparameter Optimization of Deep Learning Models for Compressor Air Leak Prediction in a Gas Turbine

11:18AM - 11:36AM

Technical Paper Publication: POWER2022-85800

Diego Noguerras-Rivera - Universidad Ana G. Méndez

Lemuel Mojica-Vazquez - Universidad Ana G. Méndez

Harry Bonilla-Alvarado - Ames Laboratory
Kenneth Bryden - Ames Laboratory
David Tucker - National Energy Technology Laboratory
Luis Traverso-Avilés - Universidad Ana G. Méndez
Diego Aponte-Roa - Universidad Ana G. Méndez

Enhanced Capabilities Through Automated Machine Learning Characterization of Natural Gas Powered Assets

11:36AM – 11:54AM

Technical Paper Publication: POWER2022-86449

Christopher Perullo - Turbine Logic
Steven Seachman - EPRI
David Noble - EPRI
Jamie Lim - Turbine Logic
Lea Boche - EPRI
Woosung Choi - EPRI

Rapid Load Response of a Solid Oxide Fuel Cell – Gas Turbine – Super Capacitor Hybrid System to Grid Demand

11:54AM – 12:12PM

Technical Presentation Only: POWER2022-85027

Biao Zhang - U.S. Department of Energy National Energy Technology Laboratory
Cory Toribio - Grove City College
Francisco Matos Ortiz - Universidad Ana G. Méndez
Anudeep Medam - Idaho National Laboratory
Nor Farida Harun - U.S. Department of Energy National Energy Technology Laboratory
Rupen Panday - U.S. Department of Energy National Energy Technology Laboratory
Nana Zhou - U.S. Department of Energy National Energy Technology Laboratory
David Tucker - U.S. Department of Energy National Energy Technology Laboratory
Samuel Bayham - U.S. Department of Energy National Energy Technology Laboratory

Evaluation of the Agent-Based Control Strategy Using a Cyber-Physical Fuel Cell/gas Turbine Hybrid Facility

12:12PM – 12:30PM

Technical Presentation Only: POWER2022-85789

Nana Zhou - National Energy Technology Laboratory
Paolo Pezzini - Ames Lab
Lawrence Shadle - National Energy Technology Laboratory
Kenneth Bryden - Ames Lab
David Tucker - National Energy Technology Laboratory

07-01 Hydrogen, Battery, Thermal Energy Storage

Room: Conference Center C

Chair: **Gopal Singh - Siemens Gamesa Renewable Energy / University of Central Florida**

Chair: **Min Zhang - Praxair, Inc., Tonawanda, NY**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Mustafa Erguvan - The University of Alabama**

Chair: **Anthony Di Carlo - Merrimack College**

Chair: **Weifei Hu - Zhejiang University**

Chair: **Navid Goudarzi - CSU Ohio**

Chair: **David MacPhee - Carleton University**

Publications/Presentations

A Dual-Layer Coating Using Nanoparticle-Polymer Hybrid Materials for Daytime Passive Radiative Cooling

11:00AM -11:18AM

Technical Paper Publication: POWER2022-82380

Kaixin Lin - City University of Hong Kong
Tong Zhu - City University of Hong Kong
Yihao Zhu - City University of Hong Kong
Tsz Chung Ho - City University of Hong Kong
Hau Him Lee - City University of Hong Kong
Luke Chao - City University of Hong Kong
Chi Yan TSO - City University of Hong Kong

Using Temperature Variations to Demonstrate Analogous Carnot Heat Engines for Salinity Gradient Energy via Capacitive Mixing

11:18AM – 11:36AM

Technical Paper Publication: POWER2022-85430

Daniel Moreno - Missouri State University

Normal Electrolyte Flow Helps in Controlling Dendrite Growth in Zinc Metal Batteries

11:36AM – 11:54AM

Technical Paper Publication: POWER2022-85501

Mihir Parekh - University of South Carolina
Christopher Rahn - Pennsylvania State University

Design Considerations and Analysis of Purification Challenges in Green Hydrogen Systems

11:54AM – 12:12PM

Technical Presentation Only: POWER2022-98083

Clayton Tucker - Lectrodryer, LLC

Techno-Economic Analysis of Solar PV-Assisted Hydroponic System - A Case Study in Johannesburg, South Africa

12:12PM – 12:30PM

Technical Paper Publication: POWER2022-86265

Paul Adedeji - Univ of Johannesburg
Obafemi Olatunji - University of Johannesburg
Nkosinathi Madushele - University of Johannesburg
Nickey Janse Van Rensburg - Process Energy and Environmental Technology Station

15-01 Student Competition

Room: Phipps

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

A Lifetime Techno-Economic Analysis of a Residential Hybrid Solid Oxide Fuel Cell Water Heater

11:00AM -11:18AM

Technical Paper Publication: POWER2022-83711

Joseph Elio - Arizona State University
Brent Skabelund - Arizona State University
Ryan Milcarek - Arizona State University

An Analysis of Different Techniques for Cooling Direct Drive Generators

11:18AM – 11:36AM

Technical Paper Publication: POWER2022-85123

Austin Hayes - University of Colorado Boulder

Gregory Whiting - University of Colorado Boulder

Switchgear for Industrial Applications and Auxiliaries Services: Technologies Comparison

11:36AM – 11:54AM

Technical Paper Publication: POWER2022-86605

Luis Ivan Ruiz Flores - ETAP / Operation Technology Inc.

Leoncio Esau Morales Ocampo - Instituto Tecnológico de Acapulco

Effect of Porous Walls and Nanofluids on the Thermo-Hydraulic Performance of Tapered Double-Layered Microchannel Heat Sink

11:54AM – 12:12PM

Technical Paper Publication: POWER2022-86626

Avinash Kumar - INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

Chirodeep Bakli - Indian Institute of Technology Kharagpur

2:00 PM - 3:30 PM

01-01 Fuels/Combustion

Room: Conference Center B

Chair: **Ashwani Gupta - Univ Of Maryland**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Jeongmin Ahn - Syracuse University**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

A Modified F-Factor Approach for Real-Time Performance Monitoring of Fossil Fuel Power Plants

2:00PM – 2:18PM

Technical Paper Publication: POWER2022-79166

Joseph Staller - Tennessee Tech University

Robert Craven - Tennessee Tech University

Stephen Idem - Tennessee Tech University

Sastry Munukutla - Shakti Consulting

Keith Kirkpatrick - McHale and Associates

Dudley Benton - McHale and Associates

Susan Eisenstadt - McHale and Associates

Karsten Kopperstad - McHale and Associates

Seth Leedy - McHale and Associates

Joseph Mchale - McHale and Associates

Anthony Licata - Licata Energy & Environmental Consulting, Inc

Dan Andrei - ASME

Internal Cathode Tubular Solid Oxide Fuel Cell Operating on Model Methane Combustion Exhaust

2:18PM – 2:36PM

Technical Paper Publication: POWER2022-84995

Alexander Hartwell - Syracuse University

Jeongmin Ahn - Syracuse University

Advancements in Nitric Oxide Emission Control With a Perovskite Based Membrane via High Frequency Electric Potential Oscillations

2:36PM – 2:54PM

Technical Paper Publication: POWER2022-85154
Aliza Willsey - Syracuse University
Thomas Welles - Syracuse University
Jeongmin Ahn - Syracuse University
Kassidy Fields - Syracuse University

08-01 Heat Exchangers & Cooling Technology I

Room: Conference Center C

Chair: **Andrew Rister - Duke Energy**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Cooling System Evaluation of 15 Kwe Class Proton Exchange Membrane Fuel Cell for Power Source of Aerial Vehicle
2:00PM – 2:18PM

Technical Paper Publication: POWER2022-85779
Hyeyoung Son - Chungnam National University
Younghyeon Kim - Chungnam National University
Sangseok Yu - Chungnam National University

Investigation of Cascade Cooling System for Dynamic Operation of Proton Exchange Membrane Fuel Cell
2:18PM – 2:36PM

Technical Paper Publication: POWER2022-85786
Sangseok Yu - Chungnam National University
Jongbin Woo - Chungnam National University
Younghyeon Kim - Chungnam National University

Dry Air Humidification With Reaction Water of Proton Exchange Membrane Fuel Cell Under Dynamic Load Follow-Up
2:36PM – 2:54PM

Technical Paper Publication: POWER2022-85795
Chanhee Lee - Chungnam National University
Younghyeon Kim - Chungnam National University
Sangseok Yu - Chungnam National University

Catastrophic High Pressure Feedwater Heater Overpressure Event at Stuart Power Station
2:54PM – 3:12PM

Technical Paper Publication: POWER2022-86318
Frank Michell - Power Industry Consulting LLC

Compression Method and Cooling Method Applying the Pitot Tube Effect
3:12PM – 3:30PM

Technical Paper Publication: POWER2022-85514
Haruo Morishige - Fukushima Nuclear Accident Countermeasures Review Group

09-02 Steam Turbines, Generators, and Auxiliaries

Room: Vandergrift

Chair: **Michael Smiarowski - Siemens Energy, Inc.**

Chair: **Andre Teixeira - EDP**
Chair: **Tina Toburen - T2E3**
Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**
Chair: **Steve Radke - Siemens**
Chair: **Davi Jose Ferreira Squaiella - Black & Veatch**
Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Case Study: Steam Turbine Modernization – Successful Brownfield Exchange of a 55-Year-Old Steam Turbine-Generator at GRU’s JR Kelly Unit 8 CAPP

2:00PM – 2:18PM

Technical Paper Publication: POWER2022-85284

Lonnie Little - Gainesville Regional Utilities

Chuck Heidt - Gainesville Regional Utilities

Mary Ann Bunn - Siemens Energy, Inc.

Diagnosis and Resolution of Functional Failure of Oil Operated Trip and Throttle Extraction Steam Valve Installed on Htc 15 Mw Steam Turbine

2:18PM – 2:36PM

Technical Paper Publication: POWER2022-85345

Fahad Qureshi - Engro Polymer and Chemicals

Muhammad Saad - Engro Polymer and Chemicals

Faheem Ahmed - Engro Polymer and Chemicals

Hydrogen Cooled Generator Fast Degas Purge System Benefits and Real-World Results

2:36PM – 2:54PM

Technical Paper Publication: POWER2022-86567

Clayton Tucker - Lectrodryer, LLC

Ted Warren - Lectrodryer, LLC

Comparison of Isolation Technologies in Electrical Substations of Transmission Systems Operators (Tso's) for Auxiliary Services

2:54PM – 3:12PM

Technical Presentation Only: POWER2022-86609

Luis Ivan Ruiz Flores - IEEE Morelos Section

Maria Esmeralda Plancarte Hernandez - Instituto Tecnológico de Acapulco

Partnering Approach on Providing Steam Turbine Modernizations on Other-OEM Equipment

3:12PM – 3:30PM

Technical Presentation Only: POWER2022-94322

Michael Smiarowski - Siemens Energy, Inc.

15-02 Student Competition

Room: Phipps

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Thermal Analysis of a Li-Ion Battery Coupled With Phase Change Material (Paraffin Wax RT-35) Filled With Copper Metal Foam: A Numerical Study

2:00PM – 2:18PM

Technical Paper Publication: POWER2022-86263

Vivek Saxena - Indian Institute of Technology Indore
Anuj Kumar - Indian Institute of Technology Indore
Akhalesh Sharma - Indian Institute of Technology Indore
Santosh K. Sahu - Indian Institute of Technology Indore
Shailesh I. Kundalwal - Indian Institute of Technology Indore

A Novel Computationally Efficient Numerical Model for Thermal Behavior Prediction of an Evacuated Tube Solar Collector Incorporated With Phase Change Materials: A Preliminary Analysis

2:18PM – 2:36PM

Technical Paper Publication: POWER2022-86324

Arman Nokhosteen - University of Missouri-Kansas City
Sarvenaz Sobhansarbandi - University of Missouri-Kansas City

Study of the Behavior of Compressible and Incompressible Fluids in a Centrifugal Pump

2:36PM – 2:54PM

Technical Presentation Only: POWER2022-86071

MOHAMMED EL KHALIL BENDADI - UNIVERSITY MS OF MASCARA

Thermodynamic Analysis and Optimization of Molten Salt Reactors Coupled With Desalination Solutions

2:54PM – 3:12PM

Technical Paper Publication: POWER2022-86548

Isabella Alcorn - Texas A&M University
Ethan Louis - Texas A&M University
Robert Gonzales - Texas A&M University
Diego Aguilar - Texas A&M University
Mark Kimber - Texas A&M University

TUESDAY, JULY 19, 2022

8:30 AM - 9:30 AM

10-01 Plant Performance & Operations

Room: Conference Center B

Chair: **Brian Wodka - RMF Engineering**

Chair: **Edward Dundon - Dominion Energy - Millstone Power Station**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Impact of Wind & Solar Generation on Electric Grid Reserve Margin

8:30AM – 8:48AM

Technical Paper Publication: POWER2022-81980

Anthony Licata - Licata Energy & Environmental Consulting, Inc
Angelos Kokkinos - Consultant

Frank Michell - Power Industry Consulting, LLC

The Research and Application of Innovative Deep Peak Shaving Technologies That Reach as Low as 20% of the Rated Load

8:48AM – 9:06AM

Technical Paper Publication: POWER2022-85019

Li Li - Shanghai Shenergy Power Technology Co., Ltd; Shanghai Waigaoqiao No.3 Power Generation Co., Ltd
Weizhong Feng - Shanghai Shenergy Power Technology Co., Ltd; Shanghai Waigaoqiao No.3 Power Generation Co., Ltd

Effect of Climate on Air Brayton Power Conversion Cycles for Microreactor Deployment

9:06AM – 9:24AM

Technical Presentation Only: POWER2022-84604

Donna Guillen - Idaho National Laboratory
Michael McKellar - University of Idaho

14-01 Nuclear Forum

Room: Vandergrift

Chair: **Jovica Riznic - Canadian Nuclear Safety Commission**

Chair: **Hakan Ozaltun - Idaho National Laboratory**

Chair: **George Mesina - Idaho National Laboratory**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Codap Programme Insights Into Operating Experience in Phwr and Lwr Piping Components

8:30AM – 8:48AM

Technical Presentation Only: POWER2022-85009

Jovica Riznic - Canadian Nuclear Safety Commission

Energy and Exergy Analysis of Nuclear Power Plant

8:48AM – 9:06AM

Technical Paper Publication: POWER2022-85619

Tim Benčin - University of Maribor, Faculty of energy technology
Jurij Avsec - University of Maribor
Urška Novosel - University of maribor, Faculty of energy technology

Summary of Property-Related Parameters and its Effect on the Simulated Thermo-Mechanical Behavior of U-10Mo Monolithic Fuel Plate

9:06AM – 9:24AM

Technical Paper Publication: POWER2022-86012

Walid Mohamed - Argonne National Laboratory
Hakan Ozaltun - Idaho National Laboratory
Hee Seok Roh - Argonne National Laboratory

Effect of Operational Parameters and Their Effects on the Simulated Thermo-Mechanical Behavior of U-10mo Monolithic Fuel Plate

9:24AM – 9:42AM

Technical Paper Publication: POWER2022-86574

Hee Seok Roh - Argonne National Laboratory
Walid Mohamed - Argonne National Laboratory

Hakan Ozaltun - Idaho National Laboratory

Generalization of RELAP5-3D Molecular Diffusion Model to a Noncondensable Gas Primary Coolant

9:42AM – 10:00AM

Technical Paper Publication: POWER2022-87071

George Mesina - Idaho National Laboratory

Robert P. Martin - BWX Technologies, Inc.

07-02 Wind Energy & Green Hydrogen

Room: Phipps

Chair: **Gopal Singh - Siemens Gamesa Renewable Energy / University of Central Florida**

Chair: **Min Zhang - Praxair, Inc., Tonawanda, NY**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Mustafa Erguvan - The University of Alabama**

Chair: **Anthony Di Carlo - Merrimack College**

Chair: **Weifei Hu - Zhejiang University**

Chair: **Navid Goudarzi - CSU Ohio**

Chair: **David MacPhee - Carleton University**

Publications/Presentations

Wind Farm Clustering Methods for Power Forecasting

8:30AM – 8:48AM

Technical Paper Publication: POWER2022-86666

Navid Goudarzi - Cleveland State University

Dorsa Ziaei - Independent Consultant

Study on Experimental Analysis and Effects of Structural Characteristics of Horizontal Axis Wind Turbine Blades
Measuring Deflection and Frequency

8:48AM – 9:06AM

Technical Paper Publication: POWER2022-81384

William Flores - Tarleton State University

Hoe-Gil Lee - Tarleton State University

Silverio Ruiz - Tarleton State University

Design Considerations and Analysis of Drying/purifying Challenges in Green Hydrogen Systems

9:06AM – 9:24AM

Technical Presentation Only: POWER2022-85594

Clayton Tucker - Lectrodryer, LLC

John Mcphearson - Lectrodryer, LLC

Blanca Ramirez - Lectrodryer, LLC

Introduction of Hydrogen in Industrial Remote Applications to Promote Variable Renewable Energy Sources

9:24AM – 9:42AM

Technical Presentation Only: POWER2022-86397

Amartya Mukherjee - AFRY Switzerland Ltd.

Amanda Grannas - AFRY Switzerland Ltd.

15-03 Student Competition

Room: Conference Center C

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Performance Evaluation of Oil Drilling Pumps

8:30AM – 8:48AM

Technical Presentation Only: POWER2022-86072

MOHAMMED EL KHALIL BENDADI - UNIVERSITY MS OF MASCARA

Physics-Informed Deep Learning-Based Modeling of a Novel Elastohydrodynamic Seal for Supercritical Co₂

Turbomachinery

8:48AM – 9:06AM

Technical Paper Publication: POWER2022-86597

Karthik Reddy Lyathakula - North Carolina State University

Sevki Cismeci - Georgia Southern University

Matthew Demond - Georgia Southern University

Hanping Xu - Ultool, LLC

Jing Tang - Ultool, LLC

CFD Analysis of Additively Manufactured Conformal Cooling Channels for the Stator of a Direct Drive Generator

9:06AM – 9:24AM

Technical Paper Publication: POWER2022-85155

Henry Vennard - Penn State

Austin Hayes - The University of Colorado Boulder

Greg Whiting - University of Colorado Boulder

Optical Performance of a Novel Tube-Bundle Cavity Receiver for Solar Parabolic Trough Collectors, { }

9:24AM – 9:42AM

Technical Paper Publication: POWER2022-85631

Hossein Ebadi - Dipartimento Energia "Galileo Ferraris", Politecnico di Torino

Shahdad Kamfiroozi - Department of Biosystems Engineering, Shiraz University

Antonio Cammi - Dipartimento Energia, Politecnico di Milano

Laura Savoldi - Dipartimento Energia "Galileo Ferraris", Politecnico Di Torino

10:30 AM - 12:00 PM

02-01 Combustion Turbines and Combined Cycle & 03-01 Boilers / HRSG

Room: Conference Center C

Chair: **Jeffrey Cobb - n/a**

Chair: **Paul Weitzel - n/a**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Flexible Use of Hydrogen Fueled Duct Burners in Combined Cycle Power Plant Hrsg
10:30AM – 10:48AM

Technical Paper Publication: POWER2022-81967
David Moelling - Tetra Engineering Group, Inc.
Early Femiana - Tetra Engineering Group Inc.
Darby Burns - Tetra Engineering Group, Inc.

Energy and Exergy Modelling of a Two Black Start Diesel Engines Integration in the Combined Cycle Gas Turbine
10:48AM – 11:06AM

Technical Paper Publication: POWER2022-85203
Dušan Strušnik - Energetika Ljubljana d.o.o.,
Marko Agrež - Energetika Ljubljana
Jurij Avsec - University of Maribor

Predicting & Preventing Risk of Vibration Induced Failures in Boilers & Hrsgs
11:06AM – 11:24AM

Technical Paper Publication: POWER2022-82445
Andreas Fabricius - Tetra Engineering EMEA
James Malloy - Tetra Engineering
Mark Taylor - Tetra Engineering
David Moelling - Tetra Engineering Group

Flow Accelerated Corrosion Failures in Nominally Low-Risk Hrsg Tube Locations
11:24AM – 11:42AM

Technical Paper Publication: POWER2022-82532
Andreas Fabricius - Tetra Engineering
James Malloy - Tetra Engineering
Mark Taylor - Tetra Engineering
Kasper Vestdam - R&R Consult
Jan Rusaas - R&R Consult

01-02 Fuels/Combustion

Room: Conference Center B

Chair: **Ashwani Gupta - Univ Of Maryland**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Jeongmin Ahn - Syracuse University**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Co-Processing of Municipal Solid Wastes With Gypsum Wastes for Enhanced Product Recovery
10:30AM – 10:48AM

Technical Paper Publication: POWER2022-85550
Kiran Raj Goud Burra - University of Maryland, College Park
Ashwani Gupta - University of Maryland, College Park

Study of a Non-Premixed Methane/Air Pilot Flame
10:48AM – 11:06AM

Technical Paper Publication: POWER2022-86073
MOHAMMED EL KHALIL BENDADI - University of Mascara

Characteristics of Swirl-Stabilized Distributed Combustion With Hydrogen-Enriched Methane
11:06AM – 11:24AM

Technical Paper Publication: POWER2022-85402
Rishi Roy - UMD
Ashwani Gupta - University of Maryland

07-03 Solar Energy

Room: Phipps

Chair: **Gopal Singh - Siemens Gamesa Renewable Energy / University of Central Florida**

Chair: **Min Zhang - Praxair, Inc., Tonawanda, NY**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Mustafa Erguvan - The University of Alabama**

Chair: **Anthony Di Carlo - Merrimack College**

Chair: **Weifei Hu - Zhejiang University**

Chair: **Navid Goudarzi - CSU Ohio**

Chair: **David MacPhee - Carleton University**

Publications/Presentations

Optimization of a Horizontal Single Axis Tracking Solar Array on Skewed Topography With Interrow Shading
10:30AM – 10:48AM

Technical Paper Publication: POWER2022-78392

Andrew Davol - California Polytechnic State University, San Luis
Jacques Belanger - California Polytechnic State University, San Luis Obispo
Logan Smith - California Polytechnic State University, San Luis Obispo
Byungyu Kim - California Polytechnic State University, San Luis Obispo
Shea Charkowsky - California Polytechnic State University, San Luis Obispo

Design of Solar Powered Greywater Treatment Plant for Residential Applications
10:48AM – 11:06AM

Technical Paper Publication: POWER2022-85201

Abdul Waris - Heriot Watt University
Fadi Ghaith - Heriot Watt University Dubai Campus

Validation of Panel Temperature Correlation Models Using Data From a Utility Scale Solar Field
11:06AM – 11:24AM

Technical Paper Publication: POWER2022-85261

Jacques Belanger - California Polytechnic State University
Andrew Davol - California Polytechnic State University
Katelynn Dinius - California Polytechnic State University
Ryan Dubois - California Polytechnic State University
Sophie Getty - California Polytechnic State University

Influence of Efficiency Advancement on Solar Pv Module Choice and Energy Yield: A Case of a Residential Building in Lagos Nigeria
11:24AM – 11:42AM

Technical Paper Publication: POWER2022-86437

Sogo Mayokun Abolarin - University of the Free State
Manasseh Babale Shitta - National Centre for Energy Efficiency and Conservation
Michael Chuks Aninyem - National Centre for Energy Efficiency and Conservation
Louis Lagrange - University of The Free State
Olatunji O. Obafemi - University of Johannesburg

2:00 PM - 3:30 PM

12-01 Experimental and Computational Fluid Dynamics and Thermal Hydraulics and Data Analytics & 04-02 Advanced Tools for Cyber-physical systems and Digital Twins

Room: Conference Center B

Chair: **Donna Guillen - Idaho National Laboratory**

Chair: **Paolo Pezzini - U.S. Dept of Energy, Ames Lab**

Chair: **George Mesina - Idaho National Laboratory**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Computational Fluid Dynamics Investigation of a Novel Bi-Directional Axial Flow Turbine for Wave Energy Conversion

2:00PM – 2:18PM

Technical Paper Publication: POWER2022-86495

Mohammad Nasim Uddin - North Carolina A&T State University

Michael Atkinson - North Carolina A&T State University

Tapas Kumar Das - Queen's University Belfast

Simon Esau - North Carolina A&T State University

Heat Transfer Effect From Floating Cold Cap Motion in a Waste Glass Melter

2:18PM – 2:36PM

Technical Paper Publication: POWER2022-85715

Donna Guillen - Idaho National Laboratory

Alexander Abboud - Idaho National Laboratory

Experimental Analysis of Innovative Seal Concept for Supercritical Power Cycles

2:36PM – 2:54PM

Technical Presentation Only: POWER2022-85966

Hanping Xu - Ultool, LLC

Mohammad Fuad Hassan - Georgia Southern University

Sevki Cesmececi - Georgia Southern University

Jonah Henry - Georgia Southern University

Joshua Bunting - Georgia Southern University

James Bradley Willis - Georgia Southern University

Jing Tang - Ultool, LLC

Shuangbiao Liu - Ultool, LLC

A Proof-of-Concept Study of a Novel Elasto-Hydrodynamic Seal for Supercritical Co2 Turbomachinery Applications

2:54PM – 3:12PM

Technical Paper Publication: POWER2022-86607

Karthik Reddy Lyathakula - North Carolina State University

Sevki Cesmececi - Georgia Southern University

Mohammad Fuad Hassan - Georgia Southern University

Hanping Xu - Ultool, LLC

Jing Tang - Ultool, LLC

13-01 Water Management, Beneficial Reuse, & Environmental Issues

Room: Conference Center C

Chair: **Heather Hunter - National Energy Technology Laboratory**

Chair: **Jessica Mullen - U.S. DoE/National Energy Technology Laboratory**

Chair: **Nicholas Siefert - DOE/NETL**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Navid Goudarzi - CSU Ohio**

Publications/Presentations

Precise and Continuous Management of Chlorination/dechlorination and Suspended Solids in Reverse Osmosis as Part of Power Generation Water Preparation Cycle

2:00PM – 2:18PM

Technical Presentation Only: POWER2022-86264

Denton Slovacek - Hach

Vadim Malkov - Hach Company

Overview of the Water Management Research and Development Program at NETL

2:18PM – 2:36PM

Technical Presentation Only: POWER2022-98121

Heather Hunter - National Energy Technology Laboratory

Treating and Co-Treating Fossil Energy Effluent Streams

2:36PM – 2:54PM

Technical Presentation Only: POWER2022-94232

Nicholas Siefert - DOE/NETL

Treatment Technology Assessment of Landfill Leachate

2:54PM – 3:12PM

Technical Presentation Only: POWER2022-93908

Chad Able - KeyLogic Systems

Eric Grol - National Energy Technology Laboratory

Danny Rellergert - Black & Veatch

Vincent Mazzoni - Black & Veatch

07-04 Thermal Energy Storage & Bio-Energy

Room: Vandergrift

Chair: **Gopal Singh - Siemens Gamesa Renewable Energy / University of Central Florida**

Chair: **Min Zhang - Praxair, Inc., Tonawanda, NY**

Chair: **Andre Teixeira - EDP**

Chair: **Tina Toburen - T2E3**

Chair: **Sarvenaz Sobhansarbandi - University of Missouri-Kansas City**

Chair: **Mustafa Erguvan - The University of Alabama**

Chair: **Anthony Di Carlo - Merrimack College**

Chair: **Weifei Hu - Zhejiang University**

Chair: **Navid Goudarzi - CSU Ohio**

Chair: **David MacPhee - Carleton University**

Publications/Presentations

Modelling of an Energetically Self-Sufficient Wastewater Treatment Plant With Zero Emission

2:00PM – 2:18PM

Technical Paper Publication: POWER2022-86440

Mustafa Erguvan - The University of Alabama

David MacPhee - Carleton University

Shahriar Amini - The University of Alabama

ADMS Technology: The Challenges of Modeling to Operating Electrical Systems With Digital Twins

2:18PM – 2:36PM

Technical Paper Publication: POWER2022-86577

Luis Ivan Ruiz Flores - ETAP / Operation Technology Inc.

Analyzing the Operating Parameters of a Compression Ignition Diesel Engine Using Artificial Neural Network

2:36PM – 2:54PM

Technical Paper Publication: POWER2022-86409

Jyotirmoy Kakati - Indian Institute of Technology Guwahati

Shubham M More - Indian Institute of Technology Guwahati

Sukhomay Pal - Indian Institute of Technology Guwahati

Ujjwal K. Saha - Indian Institute of Technology Guwahati

Baseline Evaluation of Methanogenic Potential for Mono and Codigested Wastewater Biosolids and Brewery Spent Yeast

2:54PM – 3:12PM

Technical Paper Publication: POWER2022-86510

Zelda Zenzile Rasmeni - University of Johannesburg

Daniel Madyira - University of Johannesburg

Obafemi Olatunji - University of Johannesburg

Paul Adedeji - University of Johannesburg

Anthony Matheri - University of Johannesburg

Effect of Fin Shape on Constraint Melting of Pcm in a Spherical Enclosure for Latent Heat Storage: A Numerical Study

3:12PM – 3:30PM

Technical Paper Publication: POWER2022-86314

Akhalesh Sharma - Indian Institute of Technology Indore

Vivek Saxena - Indian Institute of Technology, Indore

Santosh Kumar Sahu - Indian Institute of Technology, Indore
